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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/049,979	02/19/2002	Yong-Sik Ahn	A35012 PCT USA	2662

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NEW YORK, NY 10112

EXAMINER

HAMILTON, CYNTHIA

ART UNIT	PAPER NUMBER
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1752

DATE MAILED: 01/20/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.	Applicant(s)	
10/049,979	AHN ET AL.	
Examiner	Art Unit	
Cynthia Hamilton	1752	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 October 2003.
- 2a) ☒ This action is FINAL. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-8 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-8 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
 - 2) ☐ Certified copies of the priority documents have been received in Application No. _____.
 - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
- a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

DETAILED ACTION

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that

form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. The examiner has included in this action in Appendix I a cleaned copy of applicants' claims as filed October 22, 2004. The claims have been cleaned of all matter not to be part of the claim language to be examined. This has been done so that the examiner can clearly indicate where problems in the instant claims now lie.

6. The examiner notes that with regard to defining R₂ in claims 1 and 3, when it is an hydroxyl group then formula (1-C) is a peroxide because there is a C(=O) OOH structure present. The examiner suggests applicants consider if hydrogen, i.e. (-H), is what is

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desired here instead of hydroxyl which is (-OH) in standard chemical terminology. The examiner also notes that the substituted alkyl group in defining R_2 in claims 1 and 3 has no carbon limit.

7. Claims 3-8 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The examiner notes with respect to claim 3 and R_2 that applicants reference R_2 as a "compound" then describe the "compound" as various groups. R_2 is not a compound in the standard sense of a compound. The meaning of "compound" in YourDictionary.com is "A pure, macroscopically homogeneous substance consisting of atoms or ions of two or more different elements in definite proportions that cannot be separated by physical means. A compound usually has properties unlike those of its constituent elements. R_2 is part of a compound only. R_2 in claim 3 is defined in the last 7 lines. In this definition, it is unclear what "a hydroxy group substitute alkyl group" is. The examiner believes a comma may have been left out here in view of the limits set on R_2 claim 1. Also, in describing R_2 what is meant by "group 4 to 12 carbon atoms" is unclear. Is this supposed to be "group having 4 to 12 carbon atoms"? The examiner also notes that confusion is added to the group defining R_3 because "and" and "or" are mixed with respect to "benzene having a C1~C6 alkoxy substituent, and a hydroxide group or halogen substitute benzene". This is part of "a group consisting of". This kind of group is properly defined as a "group consisting of A, B and C" since it is a recognized Markush group. With respect to "benzene having a C1~C6 alkoxy substituent, and a hydroxide group or halogen substitute benzene", the examiner is unsure whether the hydroxide group here is a substituent on the benzene or a

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separate group from the "halogen substitute benzene". Thus, claims 3-8 are indefinite. See particularly MPEP 2173.05 (h) with respect to Markush group claim language.

8. Claim 1 is objected to because of the following informalities:

- a. In line 4 of claim 1, "A Band" should read "A, B and";
- b. At the end of line 5 in claim 1 is found "formula :." which is followed by the next word actually present in the claim and not crossed out of "formula :." .

This duplicate word needs to be crossed out.

Appropriate correction is required.

9. Claim 3 is objected to because of the following informalities: In line 3 of claim 3, "compoundof" should be "compound of". Appropriate correction is required.

10. Claims 1-8 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Applicants amended claim one from referencing the compound -A-B-C- as the self-curable binder resin to the self curable binder resin now "comprises A Band C wherein A has the formula ... wherein B has the formula ... wherein C has the formula..." It is unclear whether applicants intended to make the self curable binder resin up to three separate compounds or whether applicants intended to have A and B and C all be parts of the same compound. Applicants' use of "compound" in the original claims to reference fragments of the same compound, i.e. -A-B-C-, was using "compound" outside of it's art recognized meaning.

However, such is okay if the meaning of the term as defined by applicants is clear. The original wording was clear but the amended wording of claims 1-8 is no longer clear. The meaning of "compound" in YourDictionary.com is "A pure, macroscopically homogeneous substance consisting of atoms or ions of two or more different elements in definite proportions that cannot be separated by physical means. A compound usually has properties unlike those of its constituent elements." Without clear definition in the specification or the claim language, the examiner must assume that terms have their art recognized meaning. Since applicants have not defined A, B and C as one compound but instead three compounds, it is unclear whether applicants intend the instant resin to be one or three compounds. Thus what is meant by claims 1-8 is unclear. Because the scope now includes one compound, i.e. a compound which has all of A, B and C present as well as possibly three compounds, i.e. a compound with A, a compound with B and a compound with C, the following new matter rejection is also given because the examiner is giving the scope of the claims the broadest reasonable interpretation she can as required by examination in the USPTO.

11. Claims 3-8 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. In claim 3 the self-curable binder resin is described in "product-by-process" language wherein it is "obtained by reacting a copolymer which is prepared by copolymerizing two or three specified monomers then the copolymer is reacted with the "compound of the formula" starting on page 8 of the Amendment filed October 22, 2003. There is no description of this "compound of the

formula" set forth. Thus, the limits of claims 3-8 are unclear. In claim 5, reference is made to "compound (5) is glycidyl acrylate or glycidyl methacrylate" and in claim 7 reference is again made to "compound (5)" but there is no clear antecedent basis for this compound (5) in claim 3. Thus, the limits of claims 5 and 7 are unclear with respect to this "compound (5)". Is it possible that the "compound of the formula" starting on page 8 was intended to be followed with a description of this "compound (5)"? The examiner cannot determine what was intended here except to assume for examination purposes in considering the prior art that (1-B) of instant claim 1 is intended in claim 3 to be the derivative of the undescribed "compound of the formula" starting on page 8 when reacted with the copolymer described in claim 3. Thus, claims 3-8 are held confusing because of "compound of the formula" starting on page 8, and claims 5 and 7 are held confusing due to the lack of antecedent basis for "compound (5)".

12. Claim 8 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 8 references compound (2) being "about 10 to 90mol% based on the mol% sum of Formulae (2), (3) and (4). Is this in reference to these compounds before copolymerization or after copolymerization? This limit is referenced as "present" in the photosensitive resin composition. Compound (2) is not clearly present until this point in the photosensitive resin composition. What is present is the copolymer made from compound (2), and Formulae (2), (3) and (4). Thus, what is meant by this limit in claim 8 is unclear.

13. Claims 1-8 are rejected under 35 U.S.C. 102(b) as being anticipated by Higuchi et al (JP 09-269409 A as evidenced by 127:332903, Patent Abstracts of Japan Publication

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Number 09-269409 and attached online machine translation into English of same Japanese document). In [0020-0026] of Higuchi et al as evidenced by the machine translation, the compositions of Higuchi et al anticipate the instant compositions wherein copolymers of acrylic acid, benzyl(meta)acrylate and optionally styrene are the instant -A-B-C- polymers reacted with glycidyl methacrylate to form the instant self curable binder. The Higuchi binders are made into compositions before the crosslinkers are added. [0032-0037] of Higuchi et al as evidenced by the machine translation anticipates the compositions of instant claims 1-8. The photoinitiator used is Irgacure 369 as evidenced by 127:332903.

14. Claims 1-8 are rejected under 35 U.S.C. 102(b) as being anticipated by Hosoi et al (3,796,578). The examples of Hosoi et al anticipate the instant compositions wherein instant -A-B-C- is made up of the Hosoi et al glycidyl (meth)acrylate adducts of copolymers of styrene and acrylic acid, copolymers (styrene/acrylic acid/n-butyl acrylate), copolymers (styrene/acrylic acid acrylonitrile/methyl methacrylate), copolymers (styrene/acrylic acid acrylonitrile/ethyl acrylate), etc., all found in Table 7 and Table 2 of Hosoi et al. The compositions of Hosoi et al found in the Abstract anticipate the instant compositions. Other monomers making up the polymers include 2-ethyl hexyl methacrylate and methyl substituted styrene. Thus, with respect to instant claims 1-8, the compositions of Hosoi et al anticipate the instant compositions wherein the molecular weights of their polymers inherently fit into the limits of 1,000 to 100,000 set forth in instant claim 6. Hosoi et al disclose their polymers being formed not in the presence of a crosslinker thus the polymers form photosensitive resin compositions that do not have crosslinkers present.

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15. Claims 1-8 are rejected under 35 U.S.C. 102(b) as being anticipated by Masaki et al (EP 0 602 252 A1). The compositions of Masaki et al as found in their Examples anticipate the instant compositions. In Masaki et al, see particularly page 6, lines 9-47, page 7, page 13 lines 47-57, page 19, lines 1-20, pages 22-23, C. polymer Binder. The binder is the glycidyl adduct of copolymer of methacrylic acid, methyl methacrylate, and styrene. The molecular weights are held to inherently fall within the broad range set forth in instant claim 6. Page 14, lines 10-15, of Masaki et al disclose a photosensitive resin composition without a crosslinker present that would anticipate the instant claims 1-8.
16. Applicant's arguments filed October 22, 2003 have been fully considered but they are not persuasive. Applicants argue because they have added "consisting essentially" to claims 1-8 that this excludes the presence of the cross-linking compound. They cite as support for the elimination of a cross-linking compound in paragraph bridging pages 6-7. This argument is held to overcome rejections based upon Higuchi et al, Hosoi et al and Masaki et al all of which teach the presence of a cross-linking compound. New rejections have been presented in view of Higuchi et al, Hosoi et al and Masaki et al which are essentially that of the original rejection. Applicant's arguments do not overcome these rejections for the following reasons.

First, applicants in claim 1 added "consisting essential of" in claim 1 lines 1-2.

This is held to be a minor problem of possibly typing error.

Second, "consisting essentially" in view of paragraph bridging pages 6-7 of the original disclosure does not exclude the use of a crosslinking compound. The passage in the disclosure is:

While existing photosensitive resin components form a network structure by chemical reactions which occurs between only crosslinking compounds each other in UV exposure process, the photosensitive resin composition of the present invention forms a network structure not only with the crosslinking compounds but also with binder resin chains. Because of this, the photosensitive resin composition of the present invention provides the maximized solubility deference between an exposed area and a non exposed. Thus it can be obtained the superior film characteristics as well as the excellent sensitivity and resolution by reducing the amount of crosslinking compound or not using it.

The examiner notes that "consisting essentially of" limits the scope of a claim to the specific materials that do not materially affect the basic and novel characteristics of the claimed composition. Applicant's specification as cited teaches the crosslinkers can be present or not. This language does not state that the presence of the crosslinkers affect the basic and novel characteristics of the claimed composition. The Examiner notes that the entire original disclosure directs workers of ordinary skill in the art to use the crosslinkers or not use them as desired. While the disclosure does state here that the crosslinkers are not required present, this disclosure does not meet the requirement of excluding the crosslinker when "consisting essentially of" is used as in the instant claims 1-8. Thus, the claims are not limited as argued by applicants. The rejections remain valid as amended. The Examiner cites parts of MPEP 2111. 03 below to show the support for this defining of "consisting essentially of". It is incumbent upon applicants to show the addition of the crosslinker materially changes the characteristics of their

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invention. The examiner notes the following as support for position with respect to this claim wording and applicant's burden.

From MPEP 2111.03

The transitional phrase "consisting essentially of" limits the scope of a claim to the specified materials or steps "and those that do not materially affect the basic and novel characteristic(s)" of the claimed invention. *In re Herz*, 537 F.2d 549, 551-52, 190 USPQ 461, 463 (CCPA 1976). ... "A 'consisting essentially of' claim occupies a middle ground between closed claims that are written in a 'consisting of' format and fully open claims that are drafted in a 'comprising' format." *PPG Industries v. Guardian Industries*, 156 F.3d 1351, 1354, 48 USPQ2d 1351, 1353-54 (Fed. Cir. 1998). See also *Atlas Powder v. E.I. duPont de Nemours & Co.*, 750 F.2d 1569, 224 USPQ 409 (Fed. Cir. 1984); *In re Janakirama-Rao*, 317 F.2d 951, 137 USPQ 893 (CCPA 1963); *Water Technologies Corp. vs. Calco, Ltd.*, 850 F.2d 660, 7 USPQ2d 1097 (Fed. Cir. 1988). For the purposes of searching for and applying prior art under 35 U.S.C. 102 and 103, absent a clear indication in the specification or claims of what the basic and novel characteristics actually are, "consisting essentially of" will be construed as equivalent to "comprising." See, e.g., *PPG*, 156 F.3d at 1355, 48 USPQ2d at 1355 ("PPG could have defined the scope of the phrase 'consisting essentially of' for purposes of its patent by making clear in its specification what it regarded as constituting a material change in the basic and novel characteristics of the invention."). See also *In re Janakirama-Rao*, 317 F.2d 951, 954, 137 USPQ 893, 895-96 (CCPA 1963). If an applicant contends that additional steps or materials in the prior art are excluded by the recitation of "consisting essentially of," applicant has the burden of showing that the introduction of additional steps or components would materially change the characteristics of applicant's invention. *In re De Lajarte*, 337 F.2d 870, 143 USPQ 256 (CCPA 1964). See also *Ex parte Hoffman*, 12 USPQ2d 1061, 1063-64 (Bd. Pat. App. & Inter. 1989).

The examiner also notes that Hosoi et al and Masaki et al all make their polymers before they add the crosslinker. Thus, claims drawn to only the photosensitive polymer resin would not automatically exclude them as relevant prior art when considering compositions explicitly excluding crosslinkers.

17. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP

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§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

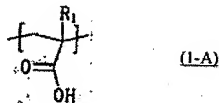
Cleaned Claim Appendix I

Cleaned Claims from Applicant's Amendment filed October 22, 2004.

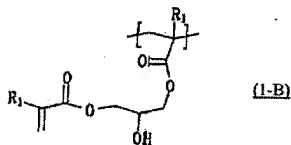
This is set forth by this Examiner not as an official copy of claims but as an aid to understanding the rejections at hand.

In the Claims:

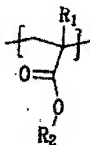
1. (Currently Amended) A photosensitive resin composition consisting
essential of a self-curable binder resin,
 a photopolymerization initiator, and a solvent,
 wherein the self-curable binder resin comprises compounds A and C wherein A has
formula :

formula:

; wherein B has the
formula:

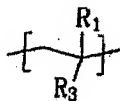


; wherein C has the
formula selected from the group consisting of



(1-C)

and



(1-C)

further, wherein R_1 is H or $-CH_3$, R_2 is an alkyl group having 1 to 8 carbon atoms, a hydroxyl group, substituted alkyl group, or a substituted or unsubstituted aryl group having 1 to 12 carbon atoms, and R_3 is a benzene, an alkyl group having 1 to 8 carbon atoms, an alkoxy group having 1 to 8 carbon atoms, a benzene having a $C_1 \sim C_5$ alkyl substituent, a benzene having a $C_1 \sim C_8$ alkoxy substituent, or a hydroxide group or halogen substitute benzene.

2. (Currently Amended) A photosensitive resin composition in accordance with claim 1, wherein compound A is present from about 10 to 50 mol%, compound B is present up to about 15 mol%, and compound C is present from about 50 to 90 mol% based on the total binder resin.

3. (Currently Amended) A photosensitive resin composition in accordance with claim 1, wherein the self-curable binder resin is obtained by reacting a copolymer which is prepared by copolymerizing a compound of the formula $CH_2=(R_1)COOH$ (2) with one or both of a compound of the formula $CH_2=(CR_1)COOR_2$ (3) and $CH_2-C(R_1)-R_2$ (4).

with a compound of the formula

wherein R_1 is hydrogen or a methyl group, R_2 is a compound selected from the group consisting of an alkyl group having 1 to 8 carbon atoms, a hydroxy group substitute alkyl group, and a substituted or unsubstituted aryl group or arylalkyl group 4 to 12 carbon atoms, and R_3 is a compound selected from the group consisting of benzene, an alkyl group having 1 to 8 carbon atoms, an alkoxy group having 1 to 8 carbon atoms, benzene having a $C_1 \sim C_8$ alkyl substituent, benzene having a $C_1 \sim C_6$ alkoxy substituent, and a hydroxide group or halogen substitute benzene.

4. (Currently Amended) A photosensitive resin composition in accordance with claim 3, wherein compound (2)

is acrylic acid or methacrylic acid, compound

(3)

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Cynthia Hamilton whose telephone number is (703) 308-3626. As of December 12, 2003, this telephone number will be 571-272-1331. The examiner can normally be reached on Monday-Friday, 9:30 am to 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mr. Mark Huff can be reached on 703-308-2464. As of December 12, 2003 this phone number will be 571-272-1385. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703 305 0661.



Primary Examiner Cynthia Hamilton

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January 11, 2004

**CYNTHIA HAMILTON
PRIMARY EXAMINER**